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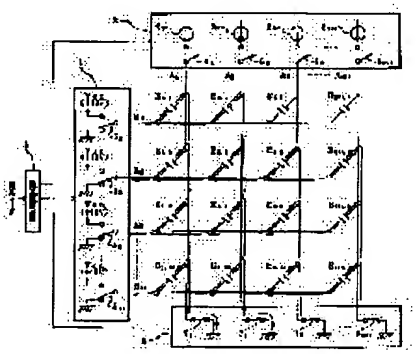
(54) DRIVING METHOD OF LIGHT EMITTING ELEMENT

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a driving method and a driving device of light emitting elements by which rising speed up to emitting the light from voltage impression can be quickened and high speed scanning can be performed and size reduction in a driving source can be attained.
SOLUTION: This driving method of a light emitting element is composed of a simple matrix driving system constituted in such a way that light emitting elements E1.1 to E256.64 are connected to respective intersectional positions of anode rays A1 to A256 and cathode rays B1 to B64 arranged in a matrix shape, and either one side of the anode rays and the cathode rays is set as scanning lines, and the other side is set as drive lines, and the light emitting elements connected to intersectional positions of the scanning lines and the drive lines are made to emit the light by connecting a drive source to a desired drive line in synchronism with the scanning while scanning the scanning lines in a prescribed period. At switching time to the next scanning line, all the scanning lines B1 to B64 are once connected to reset voltage 0V (or Vcc) composed of the same electric potential.



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* NOTICES *

1. This document has been translated by computer.So the translation may not reflect the original precisely.
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CLAIMS

[Claim(s)]
[Claim 1] Making an another side side into a drive line, and scanning the scanning line a predetermined period, while connecting a light emitting device to each intersection position of anode rays and cathode rays arranged in the shape of a matrix and making an aforementioned anode-rays or cathode-rays side into the scanning line In the drive method of a light emitting device which consists of a simple matrix drive method it was made to make the light emitting device connected to the intersection position of the scanning line and a drive line by connecting a driving source to a desired drive line synchronizing with this scan emit light The drive method of the light emitting device which switches and is sometimes characterized by connecting on the reset voltage to the following scanning line which once consists all the scanning lines of the same potential.
[Claim 2] The drive method of the light emitting device characterized by the aforementioned reset voltage being ground potential in the drive method of a light emitting device according to claim 1.
[Claim 3] The drive method of the light emitting device characterized by the aforementioned reset voltage being power supply potential in the drive method of a light emitting device according to claim 1.
[Claim 4] The drive method of the light emitting device characterized by omitting all the driving sources by the side of a drive in the drive method of a light emitting device according to claim 1 to 3.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the drive method for making light emitting devices, such as organic [EL] (electroluminescence), emit light.
[0002]
[Description of the Prior Art] The drive method of the conventional light emitting device is shown in drawing 13 . The drive method of this drawing 13 is what is called simple matrix drive method. Anode-rays A1 -Am Cathode-rays B1 -Bn It arranges in the shape of a matrix (grid). It is a light emitting device E1, 1 -Em, and n to each intersection position of anode rays and cathode rays arranged in the shape of [this] a matrix. While connecting, choosing either these anode rays or cathode rays one by one and scanning it by the fixed time interval It synchronizes with this scan and is 521-52m of driving source slack current sources about the line of another side. It is made to make the light emitting device of arbitrary intersection positions emit light by driving.
[0003] although there are two methods, a cathode-rays scan and an anode-rays drive, and an anode-rays scan and a cathode-rays drive, among the drive methods by the aforementioned driving source -- drawing 13 -- the case of a cathode-rays scan and an anode-rays drive -- being shown -- **** -- cathode-rays B1 -Bn while connecting the cathode-rays scanning circuit 51 -- anode-rays A1 -Am 521-52m of current sources from -- the becoming anode-rays drive circuit 52 is connected The cathode-rays scanning circuit 51 is 531-53n of switches. By scanning switching to a grounding terminal side one by one by the fixed time interval, it is cathode-rays B1 -Bn. It receives and ground potential (0V) is given one by one. Moreover, the anode-rays drive circuit 52 synchronizes with the switch scan of the aforementioned cathode-rays scanning circuit 51, and is 541-54m of switches. It is anode-rays A1 -Am by carrying out on-off control. Current sources 521-52m It connects and drive current is supplied to the light emitting device of a desired intersection position.
[0004] for example, the light emitting device E -- 2 and 1 E -- 3 and 1 If the case where light is made to emit is taken for an example, so that it may illustrate Switch 531 of the cathode-rays scanning circuit 51 It is switched to a ground side. The 1st cathode rays B1 When ground potential is given, it is the switch 542 of the anode-rays drive circuit 52. 543 It switches to a current-source side and they are anode rays A2. A3 Current source 522 523 What is necessary is just to connect. While making the light emitting device of arbitrary positions emit light by repeating such a scan and a drive at high speed, it controls as each light emitting device is emitting light simultaneously.
[0005] cathode rays B1 under scan Other cathode-rays B-2 -Bn(s) of an except **** -- incorrect luminescence is prevented by impressing supply voltage and the reverse bias voltage VCC of this potential In addition, at aforementioned drawing 13 , it is 521-52m of current sources as a driving source. Although used, even if it uses a voltage source, it is realizable similarly.
[0006]
[Problem(s) to be Solved by the Invention] By the way, the light emitting device E2 connected to each

intersection position, 1 -Em, and n Although each could be expressed with the parasitic capacitance C by which parallel connection was carried out to the luminescence element E which consists of diode characteristics, and this as the equal circuit was shown in drawing 14 , it had the following problems by the conventional drive method mentioned above for the parasitic capacitance C in this equal circuit.
[0007] That is, drawing 15 (A) and (B) are the anode rays A1 in aforementioned drawing 13 . The connected light emitting device E1, 1 -E1, and n Only a portion is extracted and they are each light emitting device E1, 1 -E1, and n. Although illustrated using the aforementioned parasitic capacitance C Cathode rays B1 They are anode rays A1 at the time of a scan. When not driven it is shown in (A) -- as -- cathode rays B1 under present scan the connected light emitting device E -- 1 and 1 a parasitic capacitance C -- 1 and 1 other light emitting devices E1 to remove and 2 - E1 and n a parasitic capacitance C1 and 2 - C1 and n each -- cathode-rays B-2 -Bn Sense like illustration charges with the given reverse bias voltage VCC.
[0008] next, a scanning position -- cathode rays B1 from -- following cathode-rays B-2 the time of moving -- for example, the light emitting device E -- 1 and 2 in order to make light emit -- anode rays A1 If it drives the light emitting device E which the circuit state at this time should become a thing as shown in (B), and should be made to emit light -- 1 and 2 a parasitic capacitance C -- 1 and 2 It not only charges, but other cathode-rays B3 -Bn(s) the connected light emitting device E1 and 3 - E1 and n a parasitic capacitance C1 and 3 - C1 and n Current flows into the sense as received and shown by the arrow, and charge is performed.
[0009] By the way, a light emitting device cannot perform normal luminescence, unless the voltage of the ends starts more than default value. in the conventional drive method, it was shown in aforementioned drawing 15 (A) and (B) -- as -- cathode-rays B-2 the connected light emitting device E -- 1 and 2 in order to make light emit -- anode rays A1 If it drives the light emitting device E which should be made to emit light -- 1 and 2 a parasitic capacitance C -- 1 and 2 not only -- anode rays A1 other connected light emitting devices E1 and 3 - E1 and n a parasitic capacitance C1 and 3 - C1 and n Also receive and charge is performed. until charge of the parasitic capacitance of all these light emitting devices is completed -- cathode-rays B-2 the connected light emitting device E -- 1 and 2 Ends voltage cannot start more than default value.
[0010] For this reason, in the conventional drive method, there was a problem that the rate of rise until it emits light was slow, and rapid scanning was not made, for the aforementioned parasitic capacitance. moreover, you have to charge the parasitic capacitance of all the light emitting devices connected to anode rays -- a sake -- each anode rays -- connecting -- a drive -- ** -- what also has the big current capacity of a driving source -- not carrying out -- it did not obtain but there was room of the thought also from the point of the miniaturization of a circuit
[0011] The aforementioned problem becomes larger, as the number of light emitting devices increases. When organic [EL] is especially used as a light emitting device, organic [EL] has the aforementioned large parasitic capacitance C because of field luminescence, and the aforementioned problem will become still more remarkable. The place which it was made in order that this invention might solve the above problems, and is made into the purpose is offering the drive method of the light emitting device which can miniaturize a driving source, and a driving gear while the rate of rise until it emits light from the supply start of drive current is quick and being able to perform rapid scanning.
[0012]
[Means for Solving the Problem] In order to solve the aforementioned technical problem, the following meanses were adopted in this invention. Namely, invention according to claim 1 connects a light emitting device to each intersection position of anode rays and cathode rays arranged in the shape of a matrix. Making an another side side into a drive line, and scanning the scanning line a predetermined period, while making an aforementioned anode-rays or cathode-rays side into the scanning line In the drive method of a light emitting device which consists of a simple matrix drive method it was made to make the light emitting device connected to the intersection position of the scanning line and a drive line by connecting a driving source to a desired drive line synchronizing with this scan emit light Sometimes, it is

characterized by connecting on the reset voltage to the following scanning line which once consists all the scanning lines of the same potential by switching.
[0013] Moreover, invention according to claim 2 is characterized by the aforementioned reset voltage being ground potential in invention of the claim 1 aforementioned publication.
[0014] Moreover, invention according to claim 3 is characterized by the aforementioned reset voltage being power supply potential in invention of the claim 1 aforementioned publication.
[0015] Moreover, invention according to claim 4 is characterized by omitting all the driving sources by the side of a drive line in invention given in either the aforementioned claim 1 - the claim 3.
[0016] If a scanning position is switched to the following scanning line after applying reset to all the scanning lines, when it considers as the above composition, the parasitic capacitance of the light emitting device which should be made to emit light will be simultaneously charged also with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light while a driving source charges through a drive line. For this reason, since the light emitting device which should be made to emit light starts to the potential to which the ends voltage can emit light in an instant, it can emit light in an instant.
[0017] Moreover, even when the driving source by the side of a drive line is omitted, the parasitic capacitance of the light emitting device which should be made to emit light is charged with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light, and only a short time emits light. Therefore, omitting the driving source by the side of a drive line by making it scan a period shorter than this luminescence time, lighting control can be carried out as continuation luminescence of the light emitting device is carried out.
[0018]
[Embodiments of the Invention] Hereafter, the form of operation of this invention is explained with reference to a drawing. The 1st drive method which starts this invention at drawing 1 - drawing 4 is shown. This 1st drive method is an example at the time of dropping all cathode rays and all anode rays on ground potential (0V) at once, and resetting them, in case a scan moves to the following cathode rays.
[0019] drawing 1 - drawing 4 -- setting -- A1 -A256 anode rays and B1 -B64 -- cathode rays, E1, and 1 -E -- for the light emitting device with which 256 and 64 were connected with each intersection position, and 1, as for an anode-rays drive circuit and 3, a cathode-rays scanning circuit and 2 are [an anode plate reset circuit and 4] luminescence control circuits
[0020] the cathode-rays scanning circuit 1 -- each -- it has the scanning switch 51-564 for scanning cathode-rays B1 -B64 one by one While one terminal of each scanning switch 51-564 is connected to the reverse bias voltage VCC (for example, 10V) which consists of supply voltage, the other-end child is connected to ground potential (0V), respectively.
[0021] the anode plate drive circuit 2 -- a driving source -- current source 21-2256 each -- anode-rays A1 -A256 Drive switch 61-6256 for choosing having and turning on arbitrary drive switches -- the anode rays concerned -- receiving -- current source 21-2256 for a drive It connects.
[0022] Moreover, the anode plate reset circuit 3 is anode-rays A1 -A256. Shunt switch 71-7256 for resetting to ground potential (0V) It has.
[0023] In addition, these scanning switches 51-564 and the drive switch 61-6256 And shunt switch 71-7256 Turning on and off is controlled by the luminescence control circuit 4.
[0024] Next, with reference to aforementioned drawing 1 - drawing 4 , luminescence operation by the 1st drive method is explained. in addition, operation described below -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 2 and 1 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken and explained to an example. Moreover, in order to give explanation intelligible, the diode sign showed the shining light emitting device, and the capacitor sign showed the light emitting device which has not shone. Moreover, reverse bias voltage VCC impressed to cathode-rays B1 -B64 was set to the 10V [same] as the supply voltage of equipment.
[0025] First, at drawing 1 , it is the scanning switch 51. It is switched to the 0V side and they are cathode

rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0026] therefore, the case of drawing 1 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing 1 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 1 to drawing 4 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.
[0027] That is, scans are the cathode rays B1 of drawing 1 . Cathode-rays B-2 of shell drawing 4 While turning off all the drive switches 51-564 first as shown in drawing 2 before shifting All scanning switch 51-564 and all shunt switches 71-7256 are switched to the 0V side, and it is anode-rays A1 -A256. The shunt of all of cathode-rays B1 -B64 is once carried out to 0V, and the all reset by 0V is applied. If all reset to these 0V is performed, since all the anode rays and cathode rays will serve as this potential which is 0V, the charge charged by each light emitting device discharges through the root as shown by the arrow in drawing, and the charge charge of all light emitting devices is set to zero within an instant.
[0028] As it is the above and is shown in drawing 3 after setting the charge charge of all light emitting devices to 0, it is cathode-rays B-2. Corresponding scanning switch 52 It switches to the 0V side and is cathode-rays B-2. It scans. It can come, simultaneously is the drive switch 62. 63 Current source 22 23 While switching to a side, it is the shunt switch 71 and 74-7256. It turns on and is anode rays A1 and A4 -A256. 0V are given.
[0029] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should next be made to emit light since the charge charge of all light emitting devices is set to 0 as mentioned above if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a stretch by two or more roots as shown by the arrow in drawing 3 , and the parasitic capacitance C of each light emitting device is charged in an instant
[0030] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 -> anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 4 in an instant.
[0031] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 4 in an instant.
[0032] When switched to the following scanning line, it can make the light emitting device on the switched scanning line emit light like, in an instant, since it connects with 0V which are once ground potential and the 1st drive method reset all the cathode rays and anode rays, before [which was described above] shifting to the next scan.

[0033] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 3 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.
[0034] At the example of aforementioned drawing 1 - drawing 4 , it is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.
[0035] The 2nd drive method which starts this invention at drawing 5 - drawing 8 is shown. This 2nd drive method is an example at the time of resetting all the cathode rays and anode rays to once supply voltage VCC=10V, before a scan moves to the following cathode rays. In order to realize this reset method, in the circuit of drawing 5 - drawing 8 , they are the drive switches 61-6256. It carries out, the 1st contact is considered as opening using a three-point change-over switch, and the 2nd contact is a current source 21-2256. The 3rd contact is connected to supply voltage VCC=10V, respectively. In addition, this drive switch 61-6256 Since the circuitry of other portions of an except is the same as the case of the 1st drive method mentioned above, the explanation is omitted.
[0036] Next, with reference to aforementioned drawing 5 - drawing 8 , luminescence operation by the 2nd drive method is explained. in addition, the 1st drive method which mentioned above operation described below -- the same -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 1 and 2 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken for an example.
[0037] First, at drawing 5 , it is the scanning switch 51. It is switched to the 0V side and they are cathode rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0038] therefore, the case of drawing 5 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing 5 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 5 to drawing 8 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.
[0039] That is, scans are the cathode rays B1 of drawing 5 . Cathode-rays B-2 of shell drawing 8 Before shifting, as it is first shown in drawing 6 , they are all the shunt switches 71-7256. While turning off All the scanning switches 51-564 and all drive switches 61-5256 It switches to the 10V side and is anode-rays A1 -A256. The shunt of all of cathode-rays B1 -B64 is once carried out to 10V, and the all reset by 10V is applied. If all reset to these 10V is performed, since all the anode rays and cathode rays will serve as this potential which is 10V, the charge charged by each light emitting device discharges through the root as shown by the arrow in drawing, and the charge charge of all light emitting devices is set to zero within an instant.
[0040] As it is the above and is shown in drawing 7 after setting the charge charge of all light emitting devices to 0, it is cathode-rays B-2. Corresponding scanning switch 52 It switches to the 0V side and is cathode-rays B-2. It scans. It can come, simultaneously is the drive switch 62. 63 Current sources 22 and 23 While switching to a side, it is other drive switches 61 and 64-6256. If it attaches, it switches to an open end side. Furthermore, the shunt switch 71 and 74-7256 It turns on and is anode rays A1 and A4 -A256. 0V are given.
[0041] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should next be made to emit light since the charge charge of all light emitting devices is set to 0 as mentioned above if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a

stretch by two or more roots as shown by the arrow in drawing 7 , and the parasitic capacitance C of each light emitting device is charged in an instant

[0042] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 -> anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 8 in an instant.

[0043] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 8 in an instant.

[0044] When switched to the following scanning line, it can make the light emitting device on the switched scanning line emit light like, in an instant, since it connects with 10V which are once supply voltage and the 2nd drive method reset all the cathode rays and anode rays, before [which was described above] shifting to the next scan.

[0045] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 3 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.

[0046] At the example of aforementioned drawing 5 - drawing 8 , it is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.

[0047] The 3rd drive method which starts this invention at drawing 9 - drawing 12 is shown. This 3rd drive method is anode-rays A1 -A256 while carrying out all reset of all cathode-rays B1 -B64 10V, before a scan moves to the following cathode rays. If it attaches, it is an example at the time of making it preset in preparation for the next luminescence. In addition, since circuitry itself is the same as the case of the 2nd drive method mentioned above, the explanation is omitted.

[0048] Next, with reference to aforementioned drawing 9 - drawing 12 , luminescence operation by the 3rd drive method is explained. in addition, the 1st and 2nd drive methods of having mentioned above operation described below -- the same -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 1 and 2 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken for an example.

[0049] First, at drawing 9 , it is the scanning switch 51. It is switched to the 0V side and they are cathode rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0050] therefore, the case of drawing 9 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing

9 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 9 to drawing 12 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.

[0051] That is, scans are the cathode rays B1 of drawing 9 . Cathode-rays B-2 of shell drawing 12 First, before shifting, as shown in drawing 10 , all the scanning switches 51-564 are switched to the 10V side, and all reset is applied. furthermore, the light emitting device E which should next be made to emit light about anode rays -- 2 and 2 E -- 2 and 3 Corresponding drive switch 62 63 the 10V side -- connecting -- presetting -- other drive switches 61 and 64-6256 ******** -- it connects with an open end side Moreover, the shunt switch 71 and 74-7256 It turns on and connects with 0V.

[0052] The all reset to 10V and anode rays A2 of these anode-rays B1 -B64, and A3 If presetting of supply voltage 10V is performed anode rays A2 which should carry out the charge and discharge of the charge charged by each light emitting device through the root as shown by the arrow in drawing, and should next be made to emit light A3 the connected light emitting device E2 and 1 -E -- 2, 64, E3, and 1 -E -- the charge charge of 3 and 64 is set to zero within an instant

[0053] the above -- it is -- making -- a light emitting device E2, 1 -E2, 64 andE3, and 1 -E -- after setting the charge charge of 3 and 64 to 0, it is shown in drawing 11 -- as -- scanning switch 52 the 0V side -- switching -- cathode-rays B-2 It scans. It can come, simultaneously is the drive switch 62. 63 Current sources 22 and 23 It switches to a side.

[0054] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should be made to emit light if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a stretch by two or more roots as shown by the arrow in drawing 11 , and the parasitic capacitance C of each light emitting device is charged in an instant

[0055] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 -> anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 12 in an instant.

[0056] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 12 in an instant.

[0057] When it is switched to the following scanning line since anode rays were preset in preparation for the next luminescence while resetting all cathode rays to 10V before [which was described above] the 3rd drive method shifts to the next scan, the light emitting device on the switched scanning line can be made to emit light like in an instant.

[0058] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 11 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.

[0059] Moreover, although the drive method of the above 3rd reset all cathode rays to 10V, it may be replaced with this and may reset all cathode rays to 0V.
[0060] Moreover, the example of aforementioned drawing 9 - drawing 12 is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.
[0061] By the way, when being based on the drive method of this invention so that clearly if each drawing of drawing 3 mentioned above, drawing 7 , and drawing 10 is referred to the light emitting device E which should next be made to emit light when it moves to the next scan -- 2 and 2 E -- 3 and 2 a current source 22 and 23 from -- B3 -B64 to the cathode rays B1 which it not only charges, but were able to give reverse bias voltage, the anode rays A2, and A3 Even if it leads other connected light emitting devices, it charges simultaneously.
[0062] for this reason, the charging current which minded other light emitting devices when there were many light emitting devices connected to anode rays -- a light emitting device E -- 2 and 2 E -- 3 and 2 Light can be emitted although it is a short time. Therefore, if cathode rays are scanned a period shorter than the luminescence duration by the charging current through other light emitting devices in such a case, it will be the current source 21-2256 of the anode plate drive circuit 2. Suppose that it is unnecessary.
[0063] Furthermore, although the aforementioned example was explained taking the case of the case of a cathode scan and an anode plate drive method, it is natural. [of the ability to carry out similarly by an anode plate scan and the cathode drive method]
[0064]
[Effect of the Invention] As explained above, when being based on invention according to claim 1 to 3 After applying reset to all the scanning lines, while charging the parasitic capacitance of the light emitting device which should be made to emit light by switching a scanning position to the following scanning line by the driving source through a drive line Since it was made to charge simultaneously also with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light, the ends voltage of the light emitting device which should be made to emit light can be made to be able to start to the potential which can emit light in an instant, and a light emitting device can be made to emit light in an instant. Moreover, since charge through other light emitting devices is used, capacity of each driving source can be made small and it is possible to miniaturize a driving gear.
[0065] Furthermore, since it enabled it to emit light at high speed when based on invention according to claim 4, omitting all the driving sources by the side of a drive line, it is possible still briefer and to miniaturize a driving gear.

[Translation done.]

* NOTICES *

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TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the drive method for making light emitting devices, such as organic [EL] (electroluminescence), emit light.

[Translation done.]

* NOTICES *

PRIOR ART

[Description of the Prior Art] The drive method of the conventional light emitting device is shown in drawing 13 . The drive method of this drawing 13 is what is called simple matrix drive method. Anode-rays A1 -Am Cathode-rays B1 -Bn It arranges in the shape of a matrix (grid). It is a light emitting device E1, 1 -Em, and n to each intersection position of anode rays and cathode rays arranged in the shape of [this] a matrix. While connecting, choosing either these anode rays or cathode rays one by one and scanning it by the fixed time interval It synchronizes with this scan and is 521-52m of driving source slack current sources about the line of another side. It is made to make the light emitting device of arbitrary intersection positions emit light by driving.
[0003] although there are two methods, a cathode-rays scan and an anode-rays drive, and an anode-rays scan and a cathode-rays drive, among the drive methods by the aforementioned driving source -- drawing 13 -- the case of a cathode-rays scan and an anode-rays drive -- being shown -- **** -- cathode-rays B1 -Bn while connecting the cathode-rays scanning circuit 51 -- anode-rays A1 -Am 521-52m of current sources from -- the becoming anode-rays drive circuit 52 is connected The cathode-rays scanning circuit 51 is 531-53n of switches. By scanning switching to a grounding terminal side one by one by the fixed time interval, it is cathode-rays B1 -Bn. It receives and ground potential (0V) is given one by one. Moreover, the anode-rays drive circuit 52 synchronizes with the switch scan of the aforementioned cathode-rays scanning circuit 51, and is 541-54m of switches. It is anode-rays A1 -Am by carrying out on-off control. Current sources 521-52m It connects and drive current is supplied to the light emitting device of a desired intersection position.
[0004] for example, the light emitting device E -- 2 and 1 E -- 3 and 1 If the case where light is made to emit is taken for an example, so that it may illustrate Switch 531 of the cathode-rays scanning circuit 51 It is switched to a ground side. The 1st cathode rays B1 When ground potential is given, it is the switch 542 of the anode-rays drive circuit 52. 543 It switches to a current-source side and they are anode rays A2. A3 Current source 522 523 What is necessary is just to connect. While making the light emitting device of arbitrary positions emit light by repeating such a scan and a drive at high speed, it controls as each light emitting device is emitting light simultaneously.
[0005] cathode rays B1 under scan Other cathode-rays B-2 -Bn(s) of an except **** -- incorrect luminescence is prevented by impressing supply voltage and the reverse bias voltage VCC of this potential In addition, at aforementioned drawing 13 , it is 521-52m of current sources as a driving source. Although used, even if it uses a voltage source, it is realizable similarly.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, when being based on invention according to claim 1 to 3, After applying reset to all the scanning lines, while charging the parasitic capacitance of the light emitting device which should be made to emit light by switching a scanning position to the following scanning line by the driving source through a drive line Since it was made to charge simultaneously also with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light, the ends voltage of the light emitting device which should be made to emit light can be made to be able to start to the potential which can emit light in an instant, and a light emitting device can be made to emit light in an instant. Moreover, since charge through other light emitting devices is used, capacity of each driving source can be made small and it is possible to miniaturize a driving gear.
[0065] Furthermore, since it enabled it to emit light at high speed when based on invention according to claim 4, omitting all the driving sources by the side of a drive line, it is possible still briefer and to miniaturize a driving gear.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, the light emitting device E2 connected to each intersection position, 1 -Em, and n Although each could be expressed with the parasitic capacitance C by which parallel connection was carried out to the luminescence element E which consists of diode characteristics, and this as the equal circuit was shown in drawing 14 , it had the following problems by the conventional drive method mentioned above for the parasitic capacitance C in this equal circuit.
[0007] That is, drawing 15 (A) and (B) are the anode rays A1 in aforementioned drawing 13 . The connected light emitting device E1, 1 -E1, and n Only a portion is extracted and they are each light emitting device E1, 1 -E1, and n. Although illustrated using the aforementioned parasitic capacitance C Cathode rays B1 They are anode rays A1 at the time of a scan. When not driven it is shown in (A) -- as -- cathode rays B1 under present scan the connected light emitting device E -- 1 and 1 a parasitic capacitance C -- 1 and 1 other light emitting devices E1 to remove and 2 - E1 and n a parasitic capacitance C1 and 2 - C1 and n each -- cathode-rays B-2 -Bn Sense like illustration charges with the given reverse bias voltage VCC.
[0008] next, a scanning position -- cathode rays B1 from -- following cathode-rays B-2 the time of moving -- for example, the light emitting device E -- 1 and 2 in order to make light emit -- anode rays A1 If it drives the light emitting device E which the circuit state at this time should become a thing as shown in (B), and should be made to emit light -- 1 and 2 a parasitic capacitance C -- 1 and 2 It not only charges, but other cathode-rays B3 -Bn(s) the connected light emitting device E1 and 3 - E1 and n a parasitic capacitance C1 and 3 - C1 and n Current flows into the sense as received and shown by the arrow, and charge is performed.
[0009] By the way, a light emitting device cannot perform normal luminescence, unless the voltage of the ends starts more than default value. in the conventional drive method, it was shown in aforementioned drawing 15 (A) and (B) -- as -- cathode-rays B-2 the connected light emitting device E -- 1 and 2 in order to make light emit -- anode rays A1 If it drives the light emitting device E which should be made to emit light -- 1 and 2 a parasitic capacitance C -- 1 and 2 not only -- anode rays A1 other connected light emitting devices E1 and 3 - E1 and n a parasitic capacitance C1 and 3 - C1 and n Also receive and charge is performed. until charge of the parasitic capacitance of all these light emitting devices is completed -- cathode-rays B-2 the connected light emitting device E -- 1 and 2 Ends voltage cannot start more than default value.
[0010] For this reason, in the conventional drive method, there was a problem that the rate of rise until it emits light was slow, and rapid scanning was not made, for the aforementioned parasitic capacitance. moreover, you have to charge the parasitic capacitance of all the light emitting devices connected to anode rays -- a sake -- each anode rays -- connecting -- a drive -- ** -- what also has the big current capacity of a driving source -- not carrying out -- it did not obtain but there was room of the thought also from the point of the miniaturization of a circuit
[0011] The aforementioned problem becomes larger, as the number of light emitting devices increases. When organic [EL] is especially used as a light emitting device, organic [EL] has the aforementioned

large parasitic capacitance C because of field luminescence, and the aforementioned problem will become still more remarkable. The place which it was made in order that this invention might solve the above problems, and is made into the purpose is offering the drive method of the light emitting device which can miniaturize a driving source, and a driving gear while the rate of rise until it emits light from the supply start of drive current is quick and being able to perform rapid scanning.

[Translation done.]

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MEANS

[Means for Solving the Problem] In order to solve the aforementioned technical problem, the following meanses were adopted in this invention. Namely, invention according to claim 1 connects a light emitting device to each intersection position of anode rays and cathode rays arranged in the shape of a matrix. Making an another side side into a drive line, and scanning the scanning line a predetermined period, while making an aforementioned anode-rays or cathode-rays side into the scanning line In the drive method of a light emitting device which consists of a simple matrix drive method it was made to make the light emitting device connected to the intersection position of the scanning line and a drive line by connecting a driving source to a desired drive line synchronizing with this scan emit light Sometimes, it is characterized by connecting on the reset voltage to the following scanning line which once consists all the scanning lines of the same potential by switching.
[0013] Moreover, invention according to claim 2 is characterized by the aforementioned reset voltage being ground potential in invention of the claim 1 aforementioned publication.
[0014] Moreover, invention according to claim 3 is characterized by the aforementioned reset voltage being power supply potential in invention of the claim 1 aforementioned publication.
[0015] Moreover, invention according to claim 4 is characterized by omitting all the driving sources by the side of a drive line in invention given in either the aforementioned claim 1 - the claim 3.
[0016] If a scanning position is switched to the following scanning line after applying reset to all the scanning lines, when it considers as the above composition, the parasitic capacitance of the light emitting device which should be made to emit light will be simultaneously charged also with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light while a driving source charges through a drive line. For this reason, since the light emitting device which should be made to emit light starts to the potential to which the ends voltage can emit light in an instant, it can emit light in an instant.
[0017] Moreover, even when the driving source by the side of a drive line is omitted, the parasitic capacitance of the light emitting device which should be made to emit light is charged with the reverse bias voltage of the scanning line through the parasitic capacitance of other light emitting devices which do not emit light, and only a short time emits light. Therefore, omitting the driving source by the side of a drive line by making it scan a period shorter than this luminescence time, lighting control can be carried out as continuation luminescence of the light emitting device is carried out.
[0018]
[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. The 1st drive method which starts this invention at drawing 1 - drawing 4 is shown. This 1st drive method is an example at the time of dropping all cathode rays and all anode rays on ground potential (0V) at once, and resetting them, in case a scan moves to the following cathode rays.
[0019] drawing 1 - drawing 4 -- setting -- A1 -A256 anode rays and B1 -B64 -- cathode rays, E1, and 1 -E -- for the light emitting device with which 256 and 64 were connected with each intersection position, and 1, as for an anode-rays drive circuit and 3, a cathode-rays scanning circuit and 2 are [an anode plate

reset circuit and 4] luminescence control circuits
[0020] the cathode-rays scanning circuit 1 -- each -- it has the scanning switch 51-564 for scanning cathode-rays B1 -B64 one by one While one terminal of each scanning switch 51-564 is connected to the reverse bias voltage VCC (for example, 10V) which consists of supply voltage, the other-end child is connected to ground potential (0V), respectively.
[0021] the anode plate drive circuit 2 -- a driving source -- current source 21-2256 each -- anode-rays A1 -A256 Drive switch 61-6256 for choosing having and turning on arbitrary drive switches -- the anode rays concerned -- receiving -- current source 21-2256 for a drive It connects.
[0022] Moreover, the anode plate reset circuit 3 is anode-rays A1 -A256. Shunt switch 71-7256 for resetting to ground potential (0V) It has.
[0023] In addition, these scanning switches 51-564 and the drive switch 61-6256 And shunt switch 71-7256 Turning on and off is controlled by the luminescence control circuit 4.
[0024] Next, with reference to aforementioned drawing 1 - drawing 4 , luminescence operation by the 1st drive method is explained. in addition, operation described below -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 2 and 1 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken and explained to an example. Moreover, in order to give explanation intelligible, the diode sign showed the shining light emitting device, and the capacitor sign showed the light emitting device which has not shone. Moreover, reverse bias voltage VCC impressed to cathode-rays B1 -B64 was set to the 10V [same] as the supply voltage of equipment.
[0025] First, at drawing 1 , it is the scanning switch 51. It is switched to the 0V side and they are cathode rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0026] therefore, the case of drawing 1 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing 1 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 1 to drawing 4 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.
[0027] That is, scans are the cathode rays B1 of drawing 1 . Cathode-rays B-2 of shell drawing 4 While turning off all the drive switches 51-564 first as shown in drawing 2 before shifting All scanning switch 51-564 and all shunt switches 71-7256 are switched to the 0V side, and it is anode-rays A1 -A256. The shunt of all of cathode-rays B1 -B64 is once carried out to 0V, and the all reset by 0V is applied. If all reset to these 0V is performed, since all the anode rays and cathode rays will serve as this potential which is 0V, the charge charged by each light emitting device discharges through the root as shown by the arrow in drawing, and the charge charge of all light emitting devices is set to zero within an instant.
[0028] As it is the above and is shown in drawing 3 after setting the charge charge of all light emitting devices to 0, it is cathode-rays B-2. Corresponding scanning switch 52 It switches to the 0V side and is cathode-rays B-2. It scans. It can come, simultaneously is the drive switch 62. 63 Current source 22 23 While switching to a side, it is the shunt switch 71 and 74-7256. It turns on and is anode rays A1 and A4 -A256. 0V are given.
[0029] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should next be made to emit light since the charge charge of all light emitting devices is set to 0 as mentioned above if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a stretch by two or more roots as shown by the arrow in drawing 3 , and the parasitic capacitance C of each light emitting device is charged in an instant
[0030] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 ->

anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 4 in an instant.

[0031] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 4 in an instant.

[0032] When switched to the following scanning line, it can make the light emitting device on the switched scanning line emit light like, in an instant, since it connects with 0V which are once ground potential and the 1st drive method reset all the cathode rays and anode rays, before [which was described above] shifting to the next scan.

[0033] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 3 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.

[0034] At the example of aforementioned drawing 1 - drawing 4 , it is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.

[0035] The 2nd drive method which starts this invention at drawing 5 - drawing 8 is shown. This 2nd drive method is an example at the time of resetting all the cathode rays and anode rays to once supply voltage VCC=10V, before a scan moves to the following cathode rays. In order to realize this reset method, in the circuit of drawing 5 - drawing 8 , they are the drive switches 61-6256. It carries out, the 1st contact is considered as opening using a three-point change-over switch, and the 2nd contact is a current source 21-2256. The 3rd contact is connected to supply voltage VCC=10V, respectively. In addition, this drive switch 61-6256 Since the circuitry of other portions of an except is the same as the case of the 1st drive method mentioned above, the explanation is omitted.

[0036] Next, with reference to aforementioned drawing 5 - drawing 8 , luminescence operation by the 2nd drive method is explained. in addition, the 1st drive method which mentioned above operation described below -- the same -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 1 and 2 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken for an example.

[0037] First, at drawing 5 , it is the scanning switch 51. It is switched to the 0V side and they are cathode rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0038] therefore, the case of drawing 5 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing

5 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 5 to drawing 8 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.

[0039] That is, scans are the cathode rays B1 of drawing 5 . Cathode-rays B-2 of shell drawing 8 Before shifting, as it is first shown in drawing 6 , they are all the shunt switches 71-7256. While turning off All the scanning switches 51-564 and all drive switches 61-5256 It switches to the 10V side and is anode-rays A1 -A256. The shunt of all of cathode-rays B1 -B64 is once carried out to 10V, and the all reset by 10V is applied. If all reset to these 10V is performed, since all the anode rays and cathode rays will serve as this potential which is 10V, the charge charged by each light emitting device discharges through the root as shown by the arrow in drawing, and the charge charge of all light emitting devices is set to zero within an instant.

[0040] As it is the above and is shown in drawing 7 after setting the charge charge of all light emitting devices to 0, it is cathode-rays B-2. Corresponding scanning switch 52 It switches to the 0V side and is cathode-rays B-2. It scans. It can come, simultaneously is the drive switch 62. 63 Current sources 22 and 23 While switching to a side, it is other drive switches 61 and 64-6256. If it attaches, it switches to an open end side. Furthermore, the shunt switch 71 and 74-7256 It turns on and is anode rays A1 and A4 -A256. 0V are given.

[0041] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should next be made to emit light since the charge charge of all light emitting devices is set to 0 as mentioned above if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a stretch by two or more roots as shown by the arrow in drawing 7 , and the parasitic capacitance C of each light emitting device is charged in an instant

[0042] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 -> anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 8 in an instant.

[0043] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 8 in an instant.

[0044] When switched to the following scanning line, it can make the light emitting device on the switched scanning line emit light like, in an instant, since it connects with 10V which are once supply voltage and the 2nd drive method reset all the cathode rays and anode rays, before [which was described above] shifting to the next scan.

[0045] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 3 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.

[0046] At the example of aforementioned drawing 5 - drawing 8 , it is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.
[0047] The 3rd drive method which starts this invention at drawing 9 - drawing 12 is shown. This 3rd drive method is anode-rays A1 -A256 while carrying out all reset of all cathode-rays B1 -B64 10V, before a scan moves to the following cathode rays. If it attaches, it is an example at the time of making it preset in preparation for the next luminescence. In addition, since circuitry itself is the same as the case of the 2nd drive method mentioned above, the explanation is omitted.
[0048] Next, with reference to aforementioned drawing 9 - drawing 12 , luminescence operation by the 3rd drive method is explained. in addition, the 1st and 2nd drive methods of having mentioned above operation described below -- the same -- cathode rays B1 scanning -- a light emitting device E -- 1 and 1 E -- 1 and 2 Cathode-rays B-2 after shining a scan -- moving -- a light emitting device E -- 2 and 2 E -- 3 and 2 The case where it shines is taken for an example.
[0049] First, at drawing 9 , it is the scanning switch 51. It is switched to the 0V side and they are cathode rays B1. It is scanned. Reverse bias voltage 10V are impressed to other cathode-rays B-2 -B64 by the scanning switch 52-564. furthermore, anode rays A1 A2 **** -- drive switch 61 62 A current source 51 and 52 It connects. other anode-rays A3 -A256 [moreover,] **** -- shunt switch 73-7256 0V are given.

[0050] therefore, the case of drawing 9 -- a light emitting device E -- 1 and 1 E -- 2 and 1 bias is carried out in the semi- direction -- having -- current source 51 52 from -- an arrow -- like -- drive current -- flowing in -- a light emitting device E -- 1 and 1 E -- 2 and 1 Light is emitted. In the state of this drawing 9 , the light emitting device which carried out hatching to the capacitor and which was shown in it is in the state where the polar sense respectively as shown in drawing charged. the light emitting device E of the luminescence state of this drawing 9 to drawing 12 -- 2 and 2 E -- 3 and 2 In case a scan is shifted to the state of emitting light, the following reset controls are performed.
[0051] That is, scans are the cathode rays B1 of drawing 9 . Cathode-rays B-2 of shell drawing 12 First, before shifting, as shown in drawing 10 , all the scanning switches 51-564 are switched to the 10V side, and all reset is applied. furthermore, the light emitting device E which should next be made to emit light about anode rays -- 2 and 2 E -- 2 and 3 Corresponding drive switch 62 63 the 10V side -- connecting -- presetting -- other drive switches 61 and 64-6256 ******** -- it connects with an open end side Moreover, the shunt switch 71 and 74-7256 It turns on and connects with 0V.
[0052] The all reset to 10V and anode rays A2 of these anode-rays B1 -B64, and A3 If presetting of supply voltage 10V is performed anode rays A2 which should carry out the charge and discharge of the charge charged by each light emitting device through the root as shown by the arrow in drawing, and should next be made to emit light A3 the connected light emitting device E2 and 1 -E -- 2, 64, E3, and 1 -E -- the charge charge of 3 and 64 is set to zero within an instant
[0053] the above -- it is -- making -- a light emitting device E2, 1 -E2, 64 andE3, and 1 -E -- after setting the charge charge of 3 and 64 to 0, it is shown in drawing 11 -- as -- scanning switch 52 the 0V side -- switching -- cathode-rays B-2 It scans. It can come, simultaneously is the drive switch 62. 63 Current sources 22 and 23 It switches to a side.
[0054] a switch of the above-mentioned switch -- cathode-rays B-2 the light emitting device E which should be made to emit light if a scan is performed -- 2 and 2 E -- 3 and 2 **** -- the charging current flows in at a stretch by two or more roots as shown by the arrow in drawing 11 , and the parasitic capacitance C of each light emitting device is charged in an instant
[0055] namely, the light emitting device E -- 2 and 2 **** -- the current-source 22 -> drive switch 62 -> anode-rays A2 -> light emitting device 2 and 2 -> scanning switch 52 While the charging current flows in by the root The scanning switch 51 -> cathode-rays B1 -> light emitting device E2, the 1 -> light emitting device E2, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E2, the 3 -> light emitting device E2, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E2, the 64 -> light emitting device E2, and 2 ->

scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 12 in an instant.
[0056] moreover, the light emitting device E -- 3 and 2 **** -- the current-source 23 -> drive switch 63 -> anode-rays A3 -> light emitting device 3 and 2 -> scanning switch 52 While the charging current flows in by the usual root The scanning switch 51 -> cathode-rays B1 -> light emitting device E3, the 1 -> light emitting device E3, and 2 -> scanning switch 52 Root, The scanning switch 53 -> cathode-rays B3 -> light emitting device E3, the 3 -> light emitting device E3, and 2 -> scanning switch 52 Root, ..., the scanning switch 564 -> cathode-rays B64 -> light emitting device E3, the 64 -> light emitting device E3, and 2 -> scanning switch 52 The charging current flows in simultaneous also from the root. a light emitting device E -- 2 and 2 By the charging current of these plurality, it charges in an instant, light is emitted, and it shifts to the steady state shown in drawing 12 in an instant.
[0057] When it is switched to the following scanning line since anode rays were preset in preparation for the next luminescence while resetting all cathode rays to 10V before [which was described above] the 3rd drive method shifts to the next scan, the light emitting device on the switched scanning line can be made to emit light like in an instant.
[0058] in addition, the aforementioned light emitting device E which should carry out luminescence -- 2 and 2E -- 3 and 2 although charge is performed by the root as shown by the arrow in drawing 11 about other light emitting devices of an except, respectively, since these charge directions are the directions of a reverse bias -- a light emitting device E -- 2 and 2E -- 3 and 2 There is no possibility that other light emitting devices of an except may incorrect-emit light.
[0059] Moreover, although the drive method of the above 3rd reset all cathode rays to 10V, it may be replaced with this and may reset all cathode rays to 0V.
[0060] Moreover, the example of aforementioned drawing 9 - drawing 12 is a current source 21-2256 as a driving source. Although the case where it used was shown, even if it uses a voltage source, it is realizable similarly.
[0061] By the way, when being based on the drive method of this invention so that clearly if each drawing of drawing 3 mentioned above, drawing 7 , and drawing 10 is referred to the light emitting device E which should next be made to emit light when it moves to the next scan -- 2 and 2 E -- 3 and 2 a current source 22 and 23 from -- B3 -B64 to the cathode rays B1 which it not only charges, but were able to give reverse bias voltage, the anode rays A2, and A3 Even if it leads other connected light emitting devices, it charges simultaneously.
[0062] for this reason, the charging current which minded other light emitting devices when there were many light emitting devices connected to anode rays -- a light emitting device E -- 2 and 2 E -- 3 and 2 Light can be emitted although it is a short time. Therefore, if cathode rays are scanned a period shorter than the luminescence duration by the charging current through other light emitting devices in such a case, it will be the current source 21-2256 of the anode plate drive circuit 2. Suppose that it is unnecessary.
[0063] Furthermore, although the aforementioned example was explained taking the case of the case of a cathode scan and an anode plate drive method, it is natural. [of the ability to carry out similarly by an anode plate scan and the cathode drive method]

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

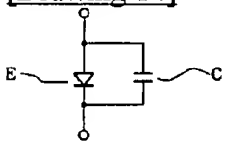
[Brief Description of the Drawings]
[Drawing 1] It is explanatory drawing of the 1st step of the 1st drive method of this invention.
[Drawing 2] It is explanatory drawing of the 2nd step of the 1st drive method of this invention.
[Drawing 3] It is explanatory drawing of the 3rd step of the 1st drive method of this invention.
[Drawing 4] It is explanatory drawing of the 4th step of the 1st drive method of this invention.
[Drawing 5] It is explanatory drawing of the 1st step of the 2nd drive method of this invention.
[Drawing 6] It is explanatory drawing of the 2nd step of the 2nd drive method of this invention.
[Drawing 7] It is explanatory drawing of the 3rd step of the 2nd drive method of this invention.
[Drawing 8] It is the 4th step explanatory drawing of the 2nd drive method of this invention.
[Drawing 9] It is explanatory drawing of the 1st step of the 3rd drive method of this invention.
[Drawing 10] It is explanatory drawing of the 2nd step of the 3rd drive method of this invention.
[Drawing 11] It is explanatory drawing of the 3rd step of the 3rd drive method of this invention.
[Drawing 12] It is explanatory drawing of the 4th step of the 3rd drive method of this invention.
[Drawing 13] It is explanatory drawing of the conventional drive method.
[Drawing 14] It is drawing showing the equal circuit of a light emitting device.
[Drawing 15] It is explanatory drawing of the charge-and-discharge state at the time of the scanning shift in the conventional drive method.
[Description of Notations]
1 Cathode-Rays Scanning Circuit
2 Anode-Rays Drive Circuit
21 -2256 Current Source (Driving Source)
3 Anode Plate Reset Circuit
4 Luminescence Control Circuit
51 -564 Scanning Switch
61 -6256 Drive Switch
71 -7256 Shunt Switch
A1 -A256 Anode rays (drive line)
B1 -B64 Cathode rays (scanning line)
E1 and 1 -E -- 256 and 64 Light emitting device
VCC Supply voltage

[Translation done.]

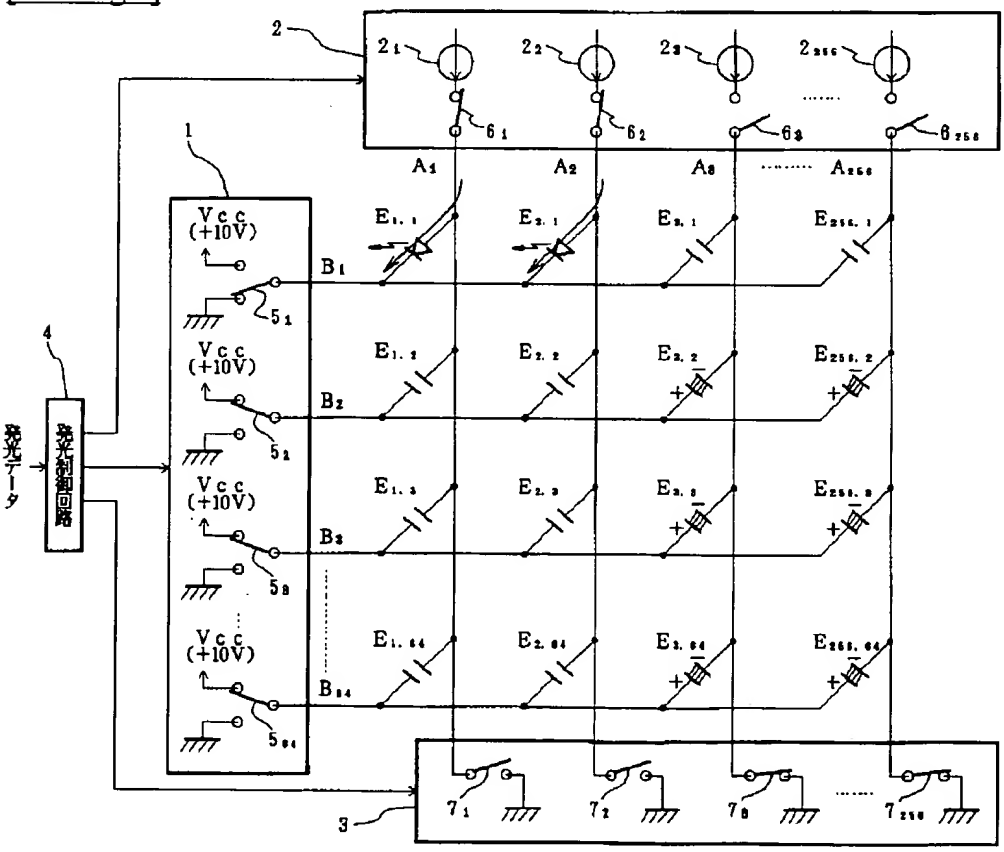
* NOTICES *

DRAWINGS

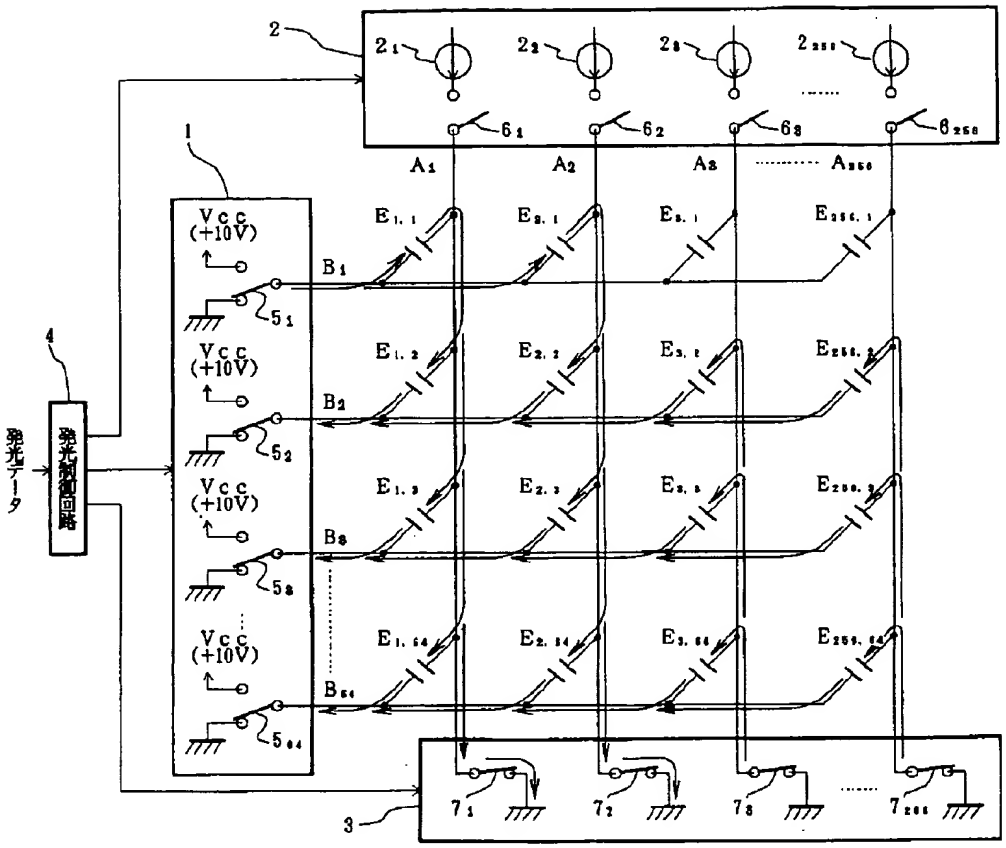
[Drawing 14]



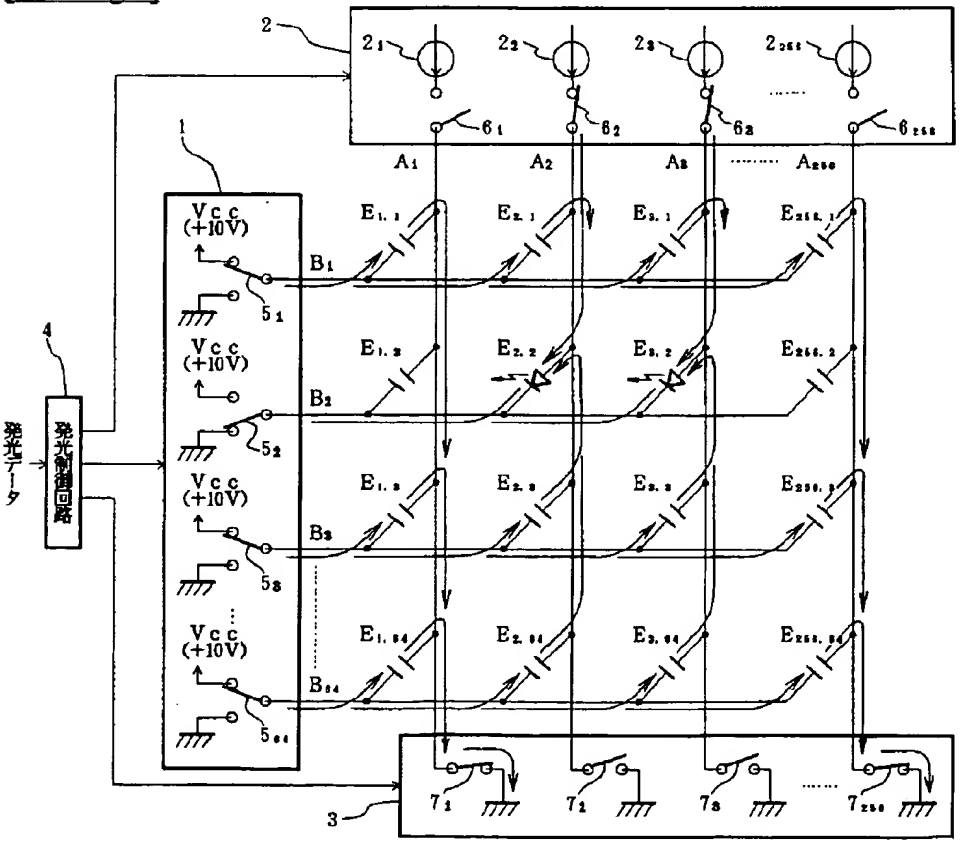
[Drawing 1]



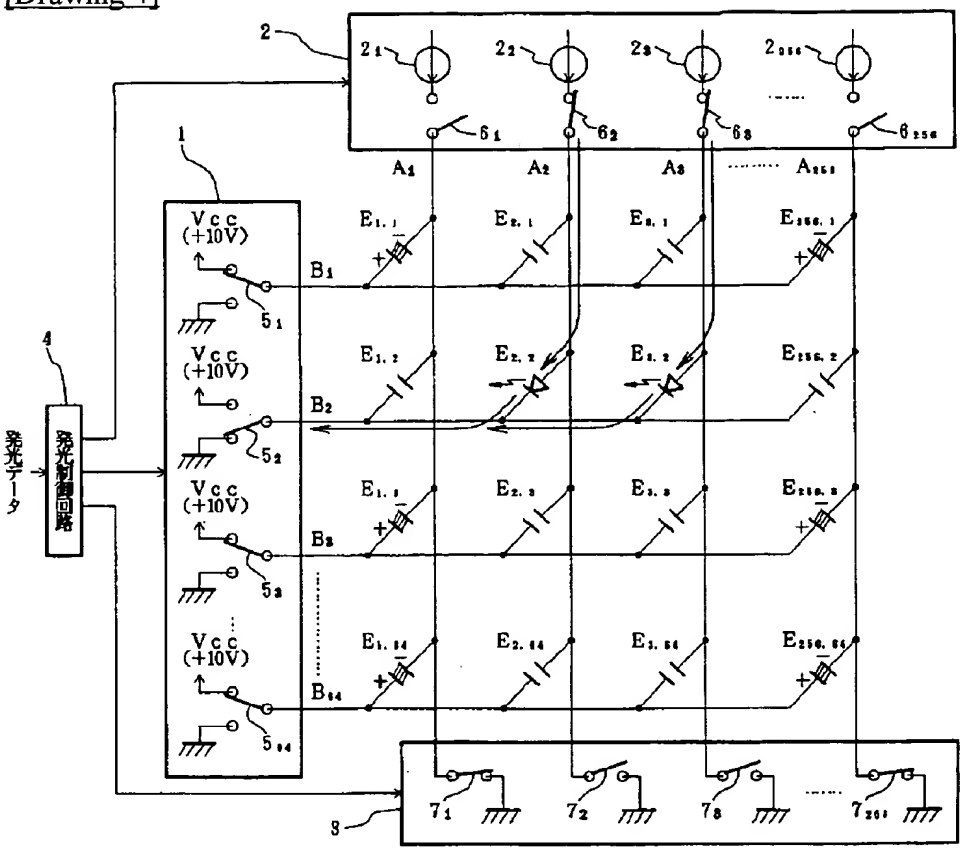
[Drawing 2]



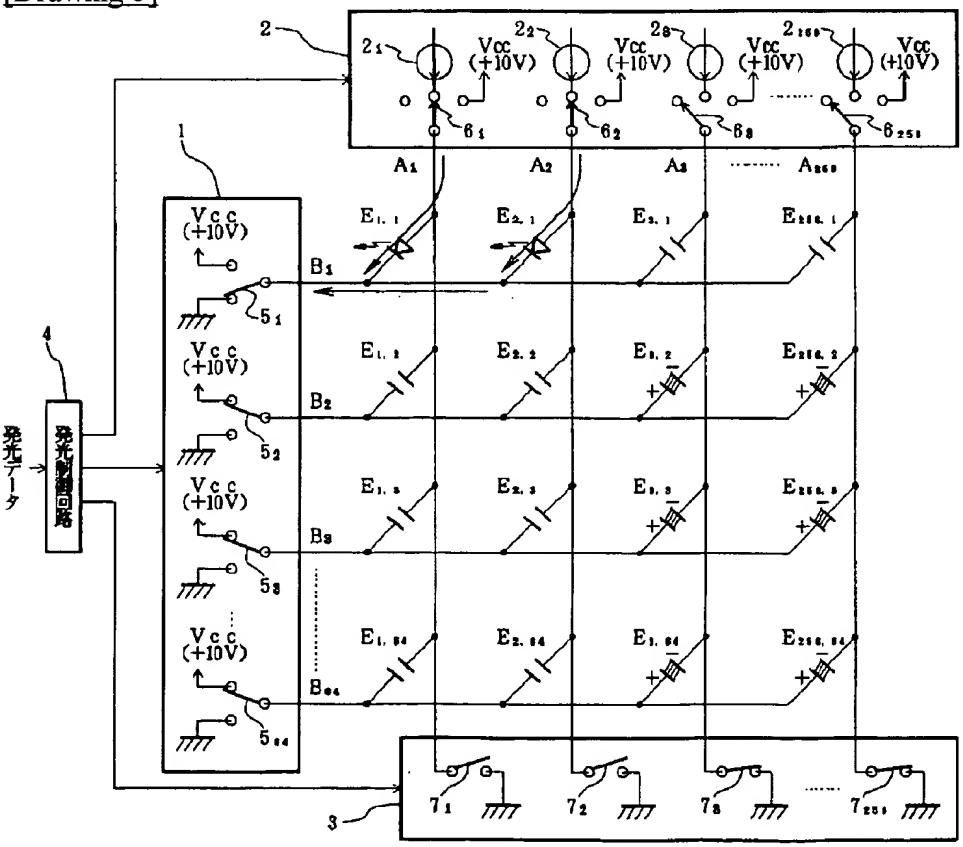
[Drawing 3]



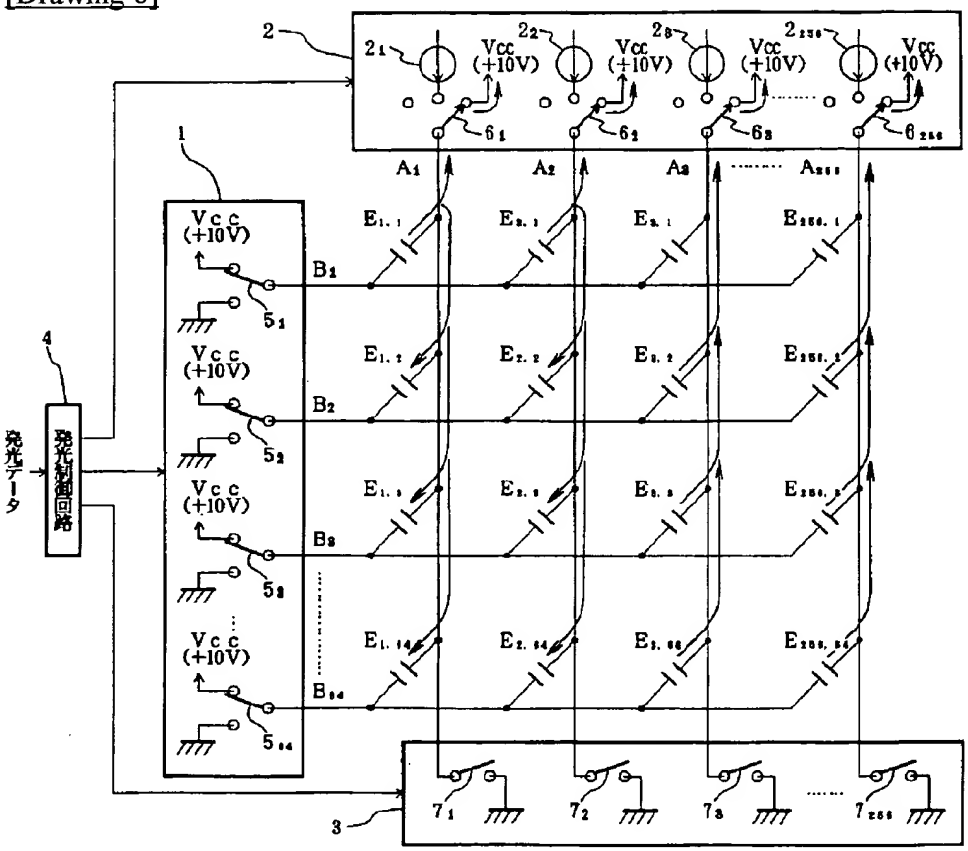
[Drawing 4]



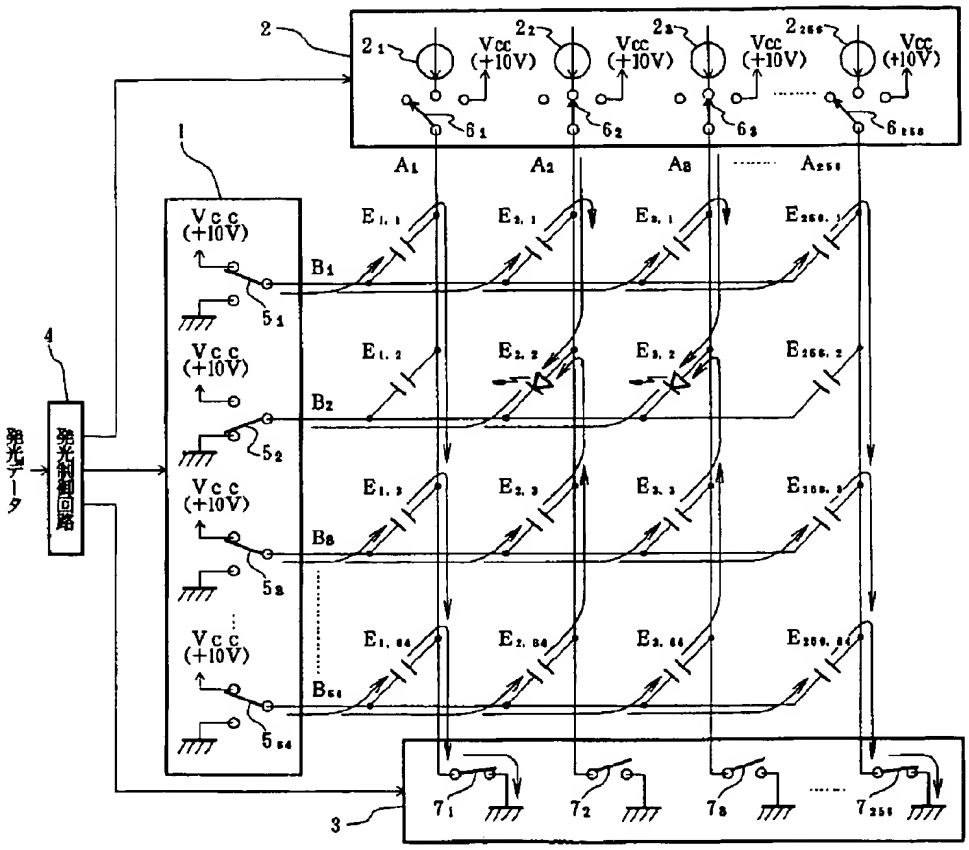
[Drawing 5]



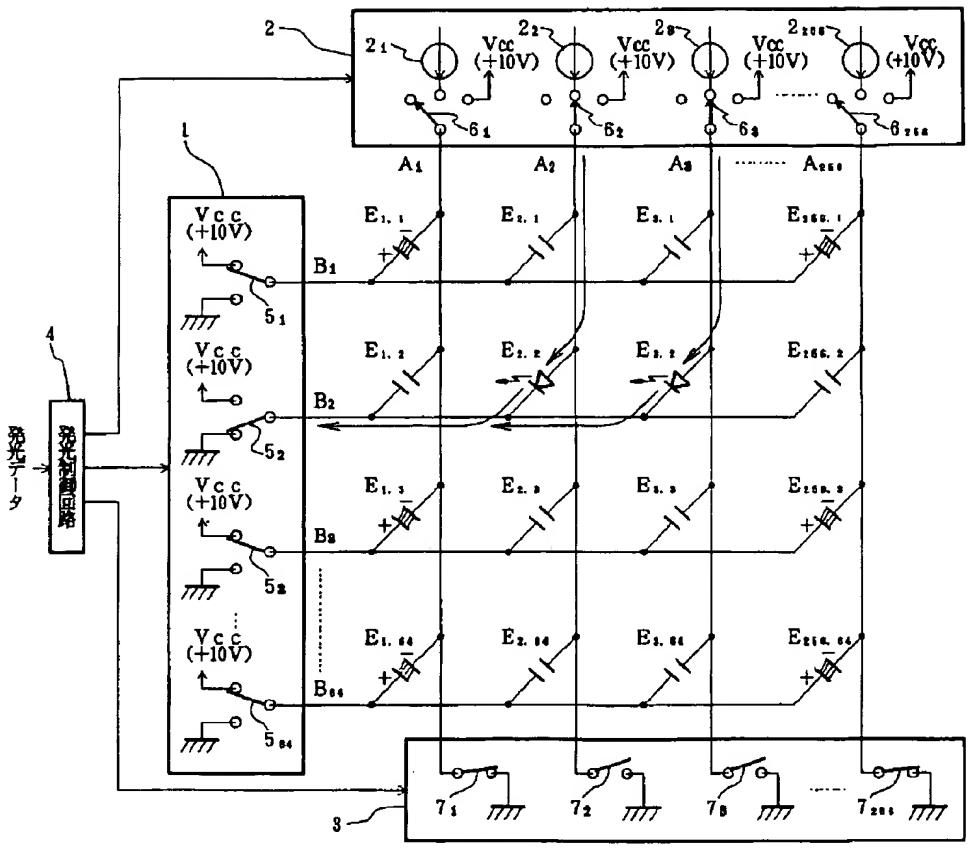
[Drawing 6]



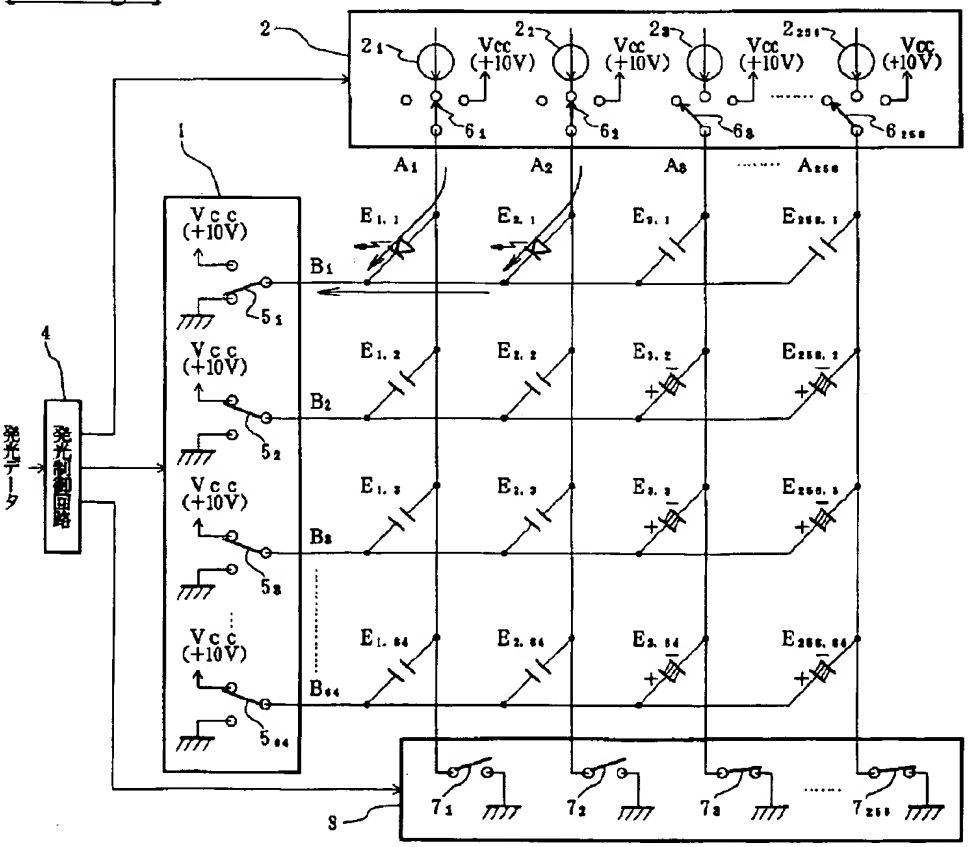
[Drawing 7]



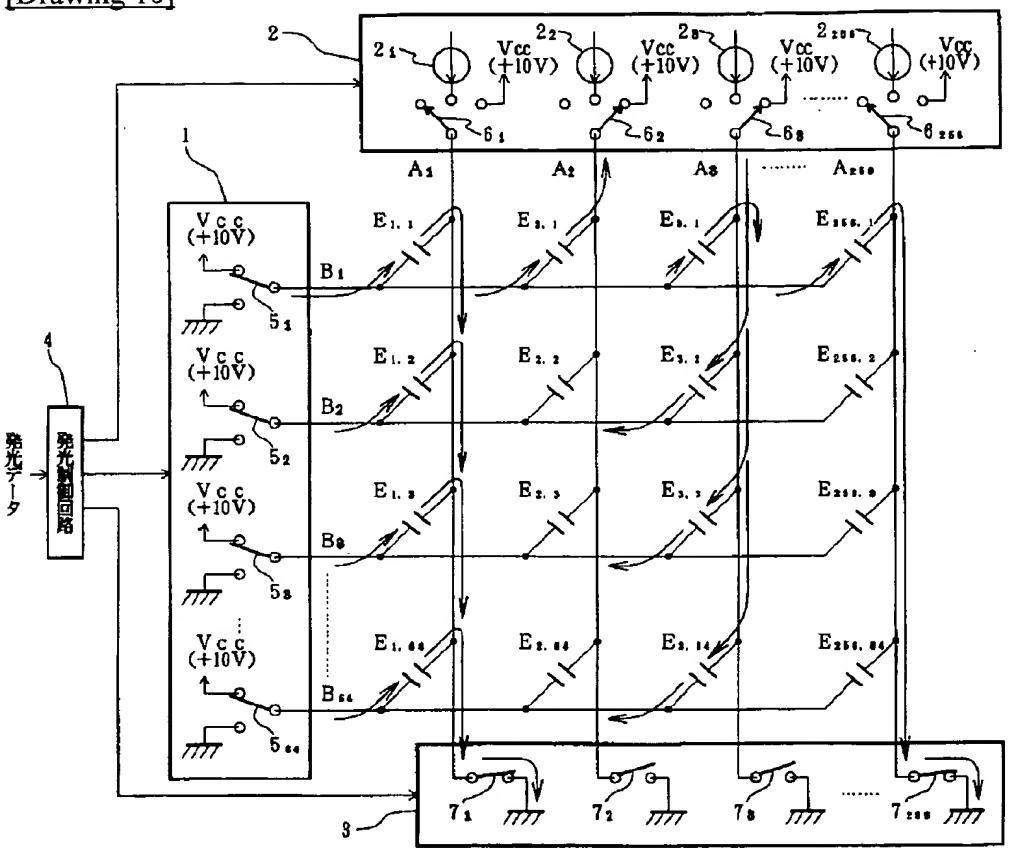
[Drawing 8]



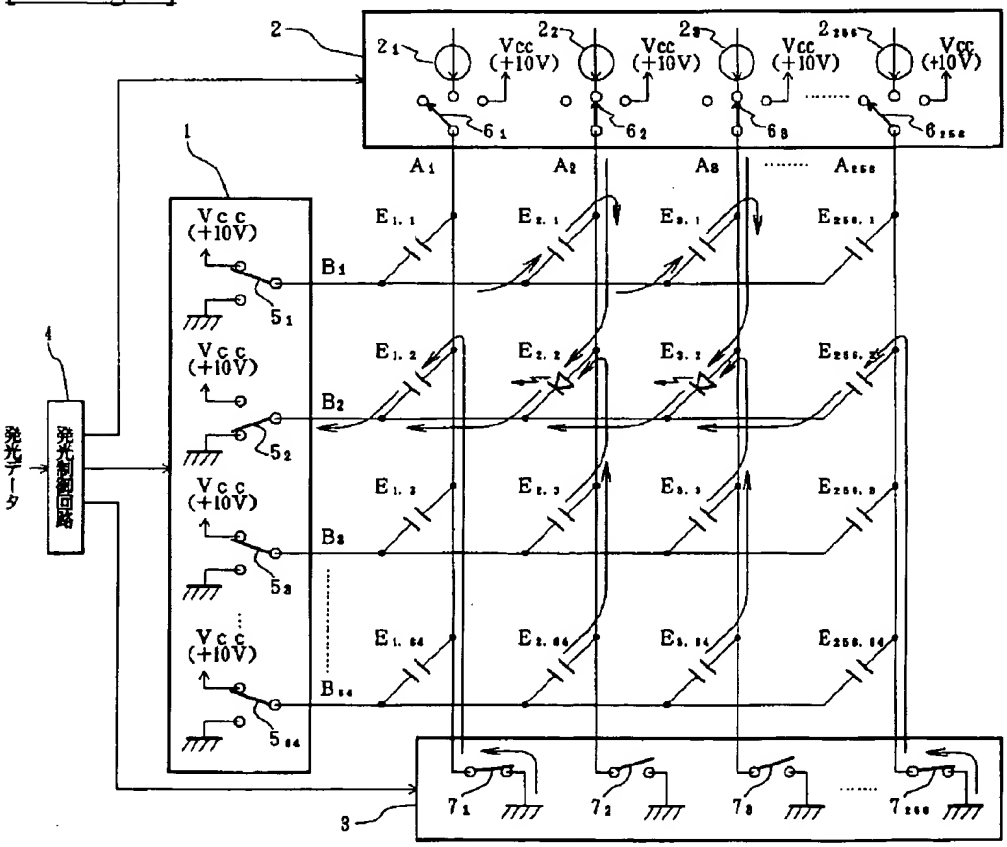
[Drawing 9]



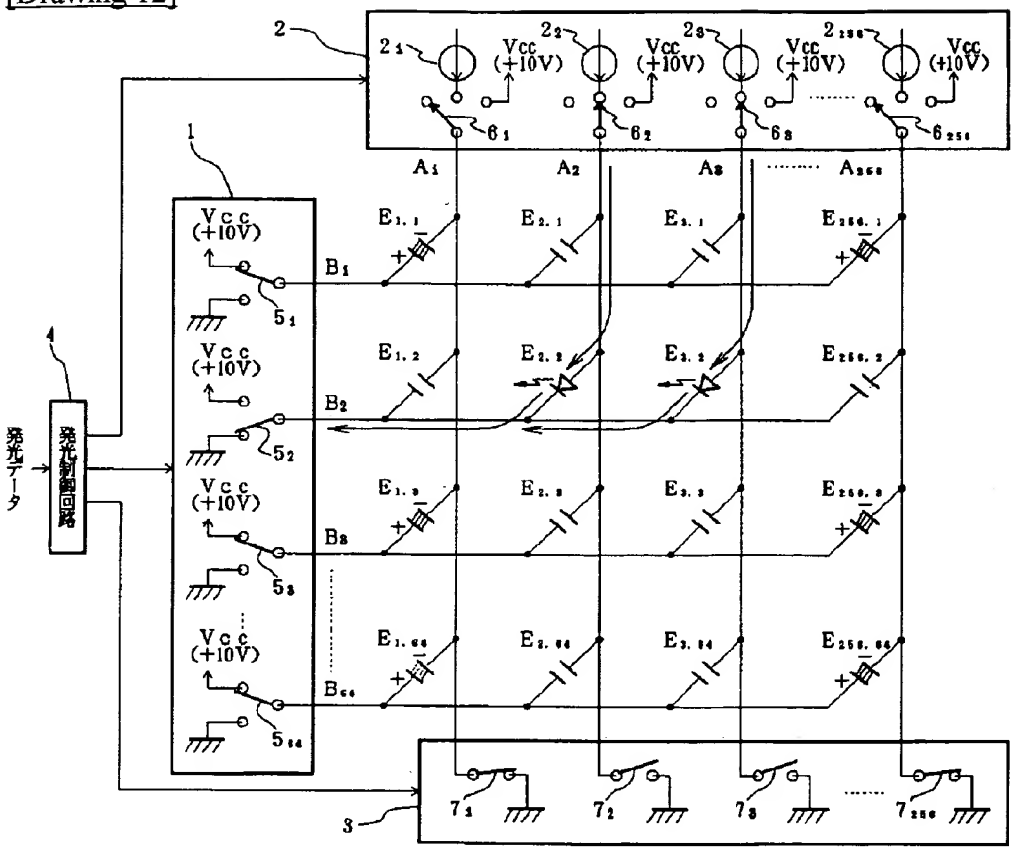
[Drawing 10]



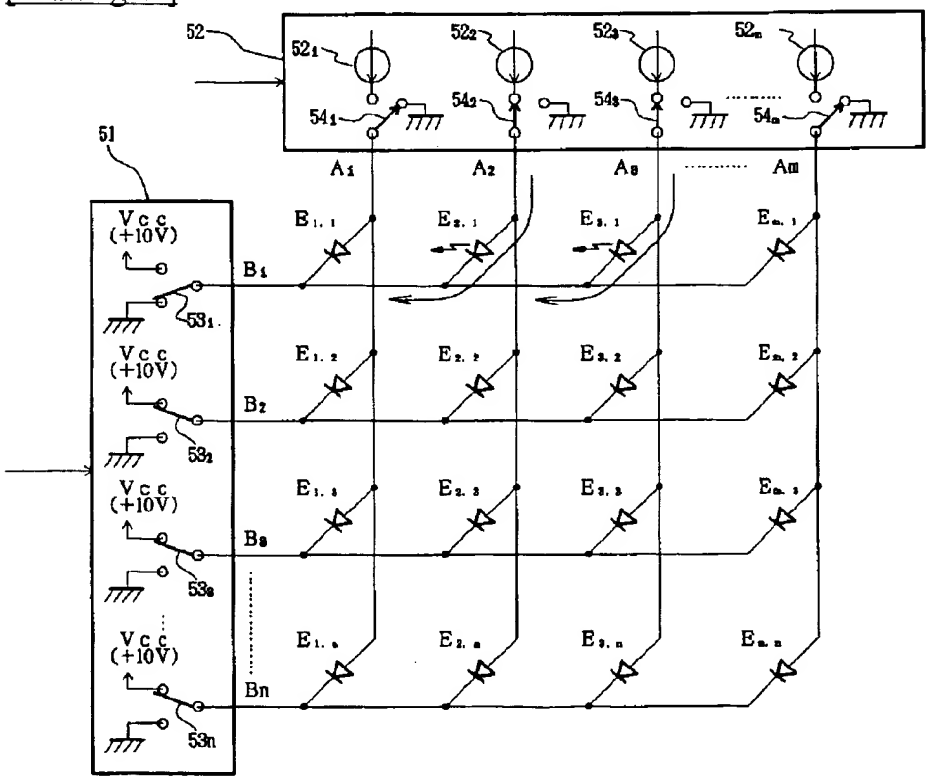
[Drawing 11]



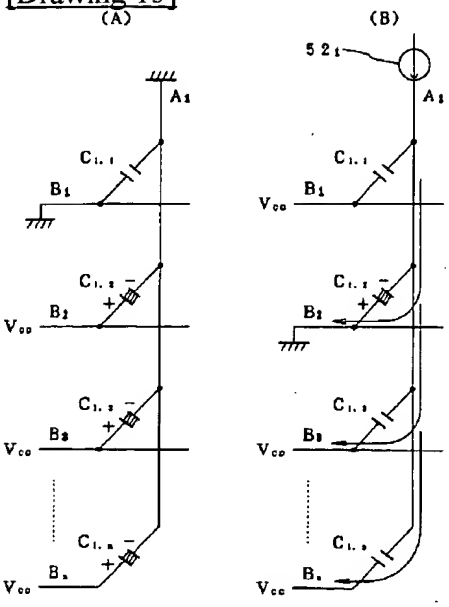
[Drawing 12]



[Drawing 13]



[Drawing 15]



[Translation done.]